

## CLAIMS

What is claimed is:

- 10084573-022702
- 1                     1.       A laminate for use as a battery housing, comprising:
- 2                     (a)     a sealant layer that is capable of acting as a barrier to an
- 3 electrolyte, the sealant layer having an internal surface that is substantially inert to the
- 4 electrolyte and an external surface;
- 5                     (b)     a barrier layer comprising a first layer of metal foil and a second
- 6 layer of metal foil adjacent to the first layer, the barrier layer having a first surface
- 7 disposed adjacent to the external surface of the sealant layer and an external surface.
- 1                     2.       The laminate of claim 1, further comprising a layer of adhesive
- 2 material between at least one pair of layers selected from the first and the second layers
- 3 of metal foil and the sealant layer and the first layer of metal foil.
- 1                     3.       The laminate of claim 1 wherein the first and second layers of
- 2 metal foil comprise aluminum foil.
- 1                     4.       The laminate of claim 1 wherein the first layer and the second
- 2 layer of metal foil each have a thickness of between 6 micrometers and 120
- 3 micrometers.
- 1                     5.       The laminate of claim 1 wherein the sealant layer is a polymer.
- 1                     6.       The laminate of claim 5 wherein the sealant layer is selected from
- 2 the group consisting of polyesters, polyamides, polyvinylchlorides, fluoroplastics, and
- 3 polyolefins.
- 1                     7.       The laminate of claim 5 wherein the polymer is selected from the

2 group consisting of low density polyethylene, high density polyethylene, medium  
3 density polyethylene, linear low density polyethylene (LLDPE), two-ply high density  
4 polyethylene/linear low density polyethylene, ethylene interpolymers, polyethylene  
5 terephthalate, polypropylene, polychloro-trifluoroethylene, polyphenylene sulfide,  
6 ethylene vinyl acetate, ethylene vinyl alcohol, nitrile resin films, nylon, rubber, and  
7 combinations thereof.

1 8. The laminate of claim 1, further comprising a protective layer  
2 having a surface disposed adjacent to the external surface of the moisture barrier layer.

1 9. The laminate of claim 8 wherein the protective layer is a  
2 polymer.

1 10. The laminate of claim 9 wherein the protective layer is selected  
2 from the group consisting of polyesters, polyamides, polyvinylchlorides, fluoroplastics,  
3 polyacrylonitrile, and polyolefins.

1 11. The laminate of claim 9 wherein the polymer is selected from the  
2 group consisting of low density polyethylene, high density polyethylene, medium  
3 density polyethylene, linear low density polyethylene (LLDPE), two-ply high density  
4 polyethylene/linear low density polyethylene, ethylene interpolymers, polyethylene  
5 terephthalate, polypropylene, polyacrylonitrile, polychloro-trifluoroethylene,  
6 polyphenylene sulfide, ethylene vinyl acetate, ethylene vinyl alcohol, nitrile resin films,  
7 nylon, rubber, and combinations thereof.

1 12. The laminate of claim 1 wherein sealant layer contains an  
2 absorbent material.

1 13. The laminate of claim 12 wherein the absorbent material is  
2 selected from the group consisting of molecular sieves, magnesium phosphate, calcium  
3 sulfate, silica gel, clays, activated charcoal, activated alumina, water absorbent resins,

4 titanium oxide, zirconium oxide, calcium oxide, and combinations thereof.

1 14. The laminate of claim 2 wherein the adhesive contains an  
2 absorbent material.

1 15. The laminate of claim 14 wherein the absorbent material is  
2 selected from the group consisting of molecular sieves, magnesium phosphate, calcium  
3 sulfate, silica gel, clays, activated charcoal, activated alumina, water absorbent resins,  
4 titanium oxide, zirconium oxide, calcium oxide, and combinations thereof.

1 16. The laminate of claim 8 wherein the protective layer contains an  
2 absorbent material.

1 17. The laminate of claim 16 wherein the absorbent material is  
2 selected from the group consisting of molecular sieves, magnesium phosphate, calcium  
3 sulfate, silica gel, clays, activated charcoal, activated alumina, water absorbent resins,  
4 titanium oxide, zirconium oxide, calcium oxide, and combinations thereof.

1 18. The laminate of claim 1, further comprising an absorbent material  
2 coated onto the internal surface of the sealant layer.

1 19. The laminate of claim 18 wherein the absorbent material is  
2 selected from the group consisting of molecular sieves, magnesium phosphate, calcium  
3 sulfate, silica gel, clays, activated charcoal, activated alumina, water absorbent resins,  
4 titanium oxide, zirconium oxide, calcium oxide, and combinations thereof.

1 20. A laminate for use as a battery housing, comprising:

2 (a) a sealant layer that is capable of acting as a barrier to an  
3 electrolyte, the sealant layer having an internal surface that is substantially inert to the  
4 electrolyte and an external surface;

5 (b) an absorbent material pattern printed on the internal surface of

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6 the sealant layer.

1 21. The laminate of claim 20 wherein the absorbent material is a  
2 moisture absorbent selected from the group consisting of molecular sieves, magnesium  
3 phosphate, calcium sulfate, silica gel, activated charcoal, water absorbent resins, and  
4 combinations thereof.

1 22. The laminate of claim 20 wherein the absorbent material is a  
2 hydrofluoric acid absorbent selected from the group consisting of activated alumina,  
3 activated charcoal, molecular sieves, clays, titanium oxide, zirconium oxide, calcium  
4 oxide, and combinations thereof.

1 23. The laminate of claim 20 wherein the sealant layer contains an  
2 absorbent material.

1 24. The laminate of claim 20 further comprising a barrier layer  
2 characterized by an internal surface that is disposed adjacent to the external surface of  
3 the sealant layer and an external surface.

1 25. The laminate of claim 24 wherein the barrier layer contains an  
2 absorbent material.

1 26. The laminate of claim 24, further comprising an adhesive  
2 material between the sealant layer and the barrier layer.

1 27. The laminate of claim 26 wherein the adhesive material contains  
2 an absorbent material.

1 28. The laminate of claim 24, further comprising a protective layer  
2 characterized by an internal surface that is disposed adjacent to the external surface of  
3 the barrier layer and an external surface.

1           29.    The laminate of claim 28 wherein the protective layer contains an  
2 adhesive material.

1           30.    The laminate of claim 28, further comprising an adhesive  
2 material between the protective layer and the barrier layer.

1           31.    The laminate of claim 30 wherein the adhesive material contains  
2 an absorbent material.

1           32.    A housing for a battery, comprising:

2           (a)    a laminate comprising a sealant layer that is capable of acting as a  
3 barrier to an electrolyte, the sealant layer having an internal surface that is substantially  
4 inert to the electrolyte and an external surface, wherein the laminate is fashioned into a  
5 pouch having at least one seam that is double sealed by a first and a second sealing  
6 region such that a channel is defined between the first and the second sealing regions;  
7 and

8           (b)    an absorbent material located within the channel defined by the  
9 first and second sealing regions of the double seal.

1           33.    The laminate of claim 32 wherein the absorbent material is a  
2 moisture absorbent selected from the group consisting of molecular sieves, magnesium  
3 phosphate, calcium sulfate, silica gel, activated charcoal, water absorbent resins, and  
4 combinations thereof.

1           34.    The laminate of claim 32 wherein the absorbent material is a  
2 hydrofluoric acid absorbent selected from the group consisting of activated alumina,  
3 activated charcoal, molecular sieves, clays, titanium oxide, zirconium oxide, calcium  
4 oxide, and combinations thereof.